

# Calving Ease

April 2016

By Sam Leadley of Attica Veterinary Associates



## Extended Weaning for Intensively Milk Fed Calves

- Doubling birth weight by 56 days of age is a common goal for intensively milk fed calves.
- High milk feeding rates depress calf starter grain (concentrate) intakes, especially among calves less than five weeks old.
- Our weaning goals need to include adequate rumen development for efficient digestion of solid feeds.
- Ten to fourteen-day long step-down weaning programs may be needed to transition intensively milk fed calves successfully from milk to solid feed.

### Performance Goals

In order to achieve the growth goal of doubling birth weight by 56 days of age an 88 pound calf at birth needs to weigh 176 pounds at two months of age. This is an average daily gain of about 1.6 pounds. When feeding whole pasteurized milk an intensive feeding program will often provide two gallons of milk per day for a calf (or, about 2.2 pounds of dry matter). This is equal to about seven quarts daily of milk replacer mixed at 15 percent solids.

### High rates of milk feeding depress calf starter grain intake

In a review of the effects milk ration on solid feed intake Kahn and Others concluded that “milk-fed dairy calves can safely ingest milk at approximately 20% of body weight.” For an 88 pound calf (Holstein breed average weight) this comes to two gallons of whole milk daily. They observe that this “greater milk consumption supports greater body weight gain, improved feed efficiency ... and reduced incidence of disease.”

However, both initial grain intake and volume grain consumed are sensitive to amount of milk fed. My calves fed only four quarts of milk daily began nibbling grain by 7 days. In comparison, calves we stepped up to eight quarts daily by the end of the first week barely touched their grain during the first two weeks. Most of my intensive-fed calves did begin regular grain consumption by three weeks – but less than one cup a day. [All calves had free-choice water.]

### Our weaning goals should include adequate rumen development

We know that it takes roughly three weeks after regular calf starter grain intake for a calf’s rumen to develop what I call functional papillae. That is, enough papillae of sufficient length to absorb nutrients from the fermentation of solid feeds. If my intensively-fed calves began regular grain intake at three weeks and we add

three more weeks for adequate papillae growth we end up with six-week old calves. That is, it was not until six weeks that they were ready to effectively absorb a significant amount rumen-fermentation nutrients.

Studies have examined the effects of extended or gradual weaning programs. Cutting back on milk ten to fourteen days before stopping all milk feeding seems to have different consequences pre and post-weaning.

During the preweaning period an extended step-down weaning program results in lower rates of gain compared to feeding the full milk ration until 3 to 5 days before ending milk feeding. The calves kept on full milk feeding continue with high rates of gain. In comparison the “step-down” calves get fewer nutrients from milk and, at first, are not able to fully replace these lost nutrients with those coming from rumen fermentation.

During post-weaning the results are reversed. The full-milk ration calves with a short weaning period are not able to fully replace the lost milk nutrients with those absorbed through the rumen – they have significantly lower growth rates than the extended “step-down” weaned calves. The “step-down” weaned calves were better prepared to shift from milk to grain as nutrient source and gained at a higher rate.

On a side note, my calves always seemed to have a good amount of variation in readiness to consume calf starter grain. At one end of the yardstick was the calf that was consuming three quarts of grain at five weeks. At the extreme other end of grain intake was the stubborn calf that did not eat any grain until she was six or seven weeks old. We should expect large variations among calves. This suggests that a weaning program that promotes the best growth and health should have management options that accommodate this variation.

For example, one option is to delay weaning until all the calves have adequate rumen development. Start weaning a week or ten days later. Another option, when practical, is to observe calf starter grain intakes. Assuming individual calf housing, flag calves for a change in milk feeding when a consumption threshold is reached.

### **A ten to fourteen-day long step-down weaning program may be needed to transition intensively milk fed calves successfully from milk to solid feed**

More and more evidence seems to be available that longer step-down weaning programs will result in both better health and high long-term rates of gain compared to shorter weaning systems. Looking back at my seven-day step-down management I conclude that given my milk replacer feeding program (2 lbs. powder daily) a longer weaning schedule might have supported better transition calf health and gains.

If I was still raising these calves I think I would do two things differently. I would do my step-down in two steps rather than one. That is, rather than dropping one full feeding I would start by dropping one feeding to one-half and maintain the other feeding at full level. Then, after a week I would make one more step down by eliminating one feeding entirely. Second, I would start weaning at five weeks rather than six – this would spread the transition over fourteen days rather than seven.

By the way, one of my practices was each morning to put a handful of good quality alfalfa hay in the top of the grain pails of the calves that were being weaned. I believed getting the calves ready for hay that they would see in the transition pens was important for their continued growth and health.

References: Chapman, C.E. and Others, “Effect of milk replacer program on calf performance and digestion of nutrients with age of the dairy calf.” *Journal of Dairy Science* 99:2740-2747 April 2016. Khan, M.A. and Others “Effects of milk ration on solid feed intake, weaning, and performance of heifers.” *Journal of Dairy Science*, 94:1071-1081 2011. Hill, T.M. and Others, “Methods of reducing milk replacer to prepare dairy calves for weaning when large amounts of milk replace have been fed.” *Professional Animal Scientist* 28:332-337 2012.

**Thanks to Attica Veterinary Associates, P.C. for their support of Calving Ease.  
Remember to search for “Calves with Sam” blog for profit tips for calf rearing.**